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(54) **METHODS OF CONTROLLING
 COMMUNICATION PARAMETERS OF
 WIRELESS SYSTEMS**

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455/69; 455/101; 455/102; 455/272

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272

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(57) ABSTRACT

The present invention provides a method for controlling a communication parameter in a channel through which data is transmitted between a transmit unit with M transmit antennas and a receive unit with N receive antennas by selecting from among proposed mapping schemes an applied mapping scheme according to which the data is converted into symbols and assigned to transmit signals TS_p , $p=1 \dots M$, which are transmitted from the M transmit antennas. The selection of the mapping scheme is based on a metric; in one embodiment the metric is a minimum Euclidean distance $d_{min,rx}$ of the symbols when received, in another embodiment the metric is a probability of error $P(e)$ in the symbol when received. The method can be employed in communication systems using multi-antenna transmit and receive units of various types including wireless systems, e.g., cellular communication systems, using multiple access techniques such as TDMA, FDMA, CDMA and OFDMA.

55 Claims, 6 Drawing Sheets

